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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Dan-Keun SUNG et al.

Appl. No : Not Yet Assigned
(National Stage of PCT/KR01/00166)

Filed : Concurrently Herewith (International Filing Date February 2, 2001)

For : MULTI-DIMENSIONAL ORTHOGONAL RESOURCE HOPPING MULTIPLEXING COMMUNICATIONS METHOD AND APPARATUS

PRELIMINARY AMENDMENT AND COVER LETTER SUBMITTING AMENDED PAGES OF APPLICATION

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

Enclosed please find a copy of amended pages 1-13, 19, 22, 26, 28-38, 42-48, 50-58, 60-67, 69, 71, 73, 78, 79, and 86, which were filed on March 13, 2002 in response to the International Preliminary Examination Report.

Based upon the submission of amended pages of specification and claims, Applicants respectfully request examination on the merits of the application containing the amended pages in place of the originally filed pages of specification and claims of International Application No. PCT/KR01/00166.

Additionally, prior to calculation of the filing fees and the examination of the above-identified application including replacement pages 67, 69, 71, 73, 78, 79, and 86 of the

claims, amendment of claims 6, 10, 14, 16, 20, 21, 22, 25, 32, 37, 39, 40, 41, 46, and 47, as follows, is respectfully requested to remove multiple dependent claims.

IN THE CLAIMS

Please amend the claims as follows (a marked-up copy of the claim amendments is provided as an attachment to this Amendment):

6. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed claim 1,

wherein said multi-dimensional orthogonal resource hopping is statistical multiplexing using a one-dimensional orthogonal resource hopping multiplexing method in which only one coordinate of the orthogonal axes hops.

10. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein said multi-dimensional orthogonal resource hopping is statistical multiplexing using a two-dimensional orthogonal resource hopping multiplexing method in which two coordinates of the orthogonal axes hops.

14. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein said multi-dimensional orthogonal resource hopping is statistical multiplexing using a three-dimensional orthogonal resource hopping multiplexing method in which three coordinates of the orthogonal axes undergo hopping.

16. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein said multi-dimensional orthogonal resource hopping of dimension N is statistical multiplexing using a multi-dimensional orthogonal resource hopping multiplexing method in which multi-dimensional)orthogonal resource #1, orthogonal resource #2, ..., orthogonal resource #N) coordinates of the orthogonal axes undergoes hopping.

20. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein said multi-dimensional orthogonal resource hopping patterns between the secondary communication stations, which are allocated by said primary communication station to said secondary communication stations at the beginning of a communication and are released at the end of the communication, are dependent.

21. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein said multi-dimensional orthogonal resource hopping patterns is allocated to each secondary communication station uniquely and therefore, become independent between the secondary communication stations.

22. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein said multi-dimensional orthogonal resource hopping multiplexing is carried out for statistically sparse or bursty channels in order to attain statistical multiplexing gain.

25. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein the physical channel control command toward a secondary communication station is transmitted by using a separate physical channel.

32. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein said multi-dimensional orthogonal resource hopping patterns for a statistical multiplexing are pseudo-randomly generated.

37. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein said communication by said multi-dimensional orthogonal resource hopping patterns periodically repeat on the basis of a frame unit.

39. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein the collisions of multi-dimensional orthogonal resource hopping patterns occurring from independent multi-dimensional orthogonal resource hopping patterns of said channels toward the secondary communication stations can cause not to transmit the data symbols of all corresponding channels during the symbol duration by previously detecting collisions at the primary communication station.

40. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein said data symbols are transmitted at the time of collision of said multi-dimensional orthogonal resource hopping patterns shows that all the transmitting data symbols of corresponding channels are identical.

41. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein said data symbols are not transmitted when a comparison at the time of a collision of said multi-dimensional orthogonal resource hopping patterns shows that all the transmitting data symbols of corresponding channels are not identical.

46. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein said hopping pattern collision processing method is only carried out when a serious error occurs during a channel decoding process in the secondary communication stations due to an overlapping of transmission antenna beams of the channels from the primary communication station where the hopping patterns collide.

47. (Amended-Clean Text) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1,

wherein said multi-dimensional hopping pattern collision processing method is only carried out when a serious error occurs during a channel decoding process in the secondary communication stations due to an overlapping of transmission antenna beams of the channels in the primary communication station where the multi-dimensional hopping patterns collide.

REMARKS

Entry of the foregoing amendment to the claims is respectfully requested prior to examination and calculation of the filing fees in the above-identified patent application.

Should there be any questions, the Examiner is invited to contact the undersigned at the below listed number.

Respectfully submitted,
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MARKED-UP COPY OF AMENDED CLAIMS

6. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed claim 1 [in one of claims 1 to 4],

wherein said multi-dimensional orthogonal resource hopping is statistical multiplexing using a one-dimensional orthogonal resource hopping multiplexing method in which only one coordinate of the orthogonal axes hops.

10. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 4],

wherein said multi-dimensional orthogonal resource hopping is statistical multiplexing using a two-dimensional orthogonal resource hopping multiplexing method in which two coordinates of the orthogonal axes hops.

14. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 4],

wherein said multi-dimensional orthogonal resource hopping is statistical multiplexing using a three-dimensional orthogonal resource hopping multiplexing method in which three coordinates of the orthogonal axes undergo hopping.

16. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 4],

wherein said multi-dimensional orthogonal resource hopping of dimension N is statistical multiplexing using a multi-dimensional orthogonal resource hopping multiplexing method in which multi-dimensional)orthogonal resource #1, orthogonal resource #2, ..., orthogonal resource #N) coordinates of the orthogonal axes undergoes hopping.

20. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 3],

wherein said multi-dimensional orthogonal resource hopping patterns between the secondary communication stations, which are allocated by said primary communication station to said secondary communication stations at the beginning of a communication and are released at the end of the communication, are dependent.

21. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 3],

wherein said multi-dimensional orthogonal resource hopping patterns is allocated to each secondary communication station uniquely and therefore, become independent between the secondary communication stations.

22. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 4],

wherein said multi-dimensional orthogonal resource hopping multiplexing is carried out for statistically sparse or bursty channels in order to attain statistical multiplexing gain.

25. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 4],

wherein the physical channel control command toward a secondary communication station is transmitted by using a separate physical channel.

32. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 4],

wherein said multi-dimensional orthogonal resource hopping patterns for a statistical multiplexing are pseudo-randomly generated.

37. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 4],

wherein said communication by said multi-dimensional orthogonal resource hopping patterns periodically repeat on the basis of a frame unit.

39. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 4],

wherein the collisions of multi-dimensional orthogonal resource hopping patterns occurring from independent multi-dimensional orthogonal resource hopping patterns of said channels toward the secondary communication stations can cause not to transmit the data symbols of all corresponding channels during the symbol duration by previously detecting collisions at the primary communication station.

40. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 4],

wherein said data symbols are transmitted at the time of collision of said multi-dimensional orthogonal resource hopping patterns shows that all the transmitting data symbols of corresponding channels are identical.

41. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 4],

wherein said data symbols are not transmitted when a comparison at the time of a collision of said multi-dimensional orthogonal resource hopping patterns shows that all the transmitting data symbols of corresponding channels are not identical.

46. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 3],

wherein said hopping pattern collision processing method is only carried out when a serious error occurs during a channel decoding process in the secondary communication stations due to an overlapping of transmission antenna beams of the channels from the primary communication station where the hopping patterns collide.

47. (Amended) The method for multi-dimensional orthogonal resource hopping multiplexing communication as claimed in claim 1 [one of claims 1 to 3],

wherein said multi-dimensional hopping pattern collision processing method is only carried out when a serious error occurs during a channel decoding process in the secondary communication stations due to an overlapping of transmission antenna beams of the channels in the primary communication station where the multi-dimensional hopping patterns collide.